

## **CLAIMS**

1    1.    A maskless lithography system comprising an array of focusing elements, each of which  
2    focuses an energy beam from an array of sources into an array of focal spots in order to create a  
3    permanent pattern on an adjacent substrate.

1    2.    The maskless lithography system as claimed in claim 1, wherein said array of sources  
2    includes an array of light emitting diodes.

1    3.    The maskless lithography system as claimed in claim 1, wherein said array of sources  
2    includes an array of semiconductor lasers.

1    4.    The maskless lithography system as claimed in claim 1, wherein said array of sources  
2    includes an array of vertical cavity surface emitting lasers.

1    5.    The maskless lithography system as claimed in claim 1, wherein said array of focusing  
2    elements includes an array of diffractive elements.

1    6.    The maskless lithography system as claimed in claim 1, wherein said array of focusing  
2    elements includes an array of Fresnel lenses.

1    7.    The maskless lithography system as claimed in claim 1, wherein said system further includes  
2    an array of microlenses interposed between said array of sources and said array of focusing  
3    elements.

1    8.    A maskless lithography system comprising an array of focusing elements, an array of  
2    microlenses, and an array of energy sources, wherein each energy source is positioned to selectively

3 direct energy through a microlens toward a focusing element, and each focusing element is  
4 positioned to direct a focused beam toward a substrate to create a permanent pattern thereon.

1 9. The maskless lithography system as claimed in claim 8, wherein said array of sources  
2 includes an array of light emitting diodes.

1 10. The maskless lithography system as claimed in claim 8, wherein said array of sources  
2 includes an array of semiconductor lasers.

1 11. The maskless lithography system as claimed in claim 8, wherein said array of sources  
2 includes an array of vertical cavity surface emitting lasers.

1 12. The maskless lithography system as claimed in claim 8, wherein said array of focusing  
2 elements includes an array of diffractive elements.

1 13. A maskless lithography system comprising an array of Fresnel lenses, each of which focuses  
2 an energy beam from an array of sources into an array of focal spots in order to create a permanent  
3 pattern on an adjacent substrate.

1 14. The maskless lithography system as claimed in claim 13, wherein said Fresnel lenses are  
2 blazed.

1 15. The maskless lithography system as claimed in claim 13, wherein said Fresnel lenses are  
2 apodized.

1 16. A maskless lithography system comprising an array of photon sieves, each of which focuses

- 2 an energy beam from an array of sources into an array of focal spots in order to create a permanent
- 3 pattern on an adjacent substrate.